

the day. One of the tortoise collected in March passed very loose excreta and in a large quantity. It contained only plant matter and grasses like *Sporobolus*, *Dichanthium*, *Cymbopogon* and *Aristida* could be identified. The same species of grasses were also identified from the faecal matter of a tortoise collected in the month of October.

Smith (1931) reported that a female *T. elegans* deposited four eggs on 11 November. Minton (1966) mentioned that these tortoise in semi-domestication in the suburbs of Karachi copulate soon after the onset of rains. A clutch of five eggs was reported in the month of November. Young ones were collected late during August and September. Minton regarded them to be several months old and suspected that hatching occurs during February and March. The hatchlings remain buried and quiescent until the onset of rains. The young tortoise collected at Bisalpur in September, however, appeared to be a newly-hatched one as its shell was membranous and could be punctured with a pin. I, therefore, suspect that female tortoise lays eggs during the summer also. The eggs require slightly over three months for hatching as is the case with *Testudo horsfieldi* (Sergeev 1941). It is not, therefore, unlikely that *Testudo elegans* lays eggs during winter and second time during the summer. The observed hatchling might have been from a summer brood.

I could not make further observations on the young one as a House Rat, *Rattus rattus rufescens* cut open the membranous shell and scooped the hatchling for its dinner.

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### 10. THE CATCHING OF SNAKES

Finding a snake is the first problem a prospective ophiologist must take up. One can learn by experience, by searching 'likely' places repeatedly, at different times of day and night, during different seasons of the year, to ascertain which species may be found where and when.

Even in areas of heavy snake population a collector may not find many snakes because he has not 'learned' the area. In India if a local snake-catcher with a good knowledge of the area is available for help, he will provide very important shortcuts to what could be the tedious job of years of gaining experience. A rewarding (but be prepared to be bothered) practice is to publicize the fact that you're interested in snakes, and if your area is suitable the monsoon will not only bring rain but a deluge of village people to tell you of the snake that is currently inhabiting their dwelling or field. In looking over collection data I find that of fifty snakes recently caught, thirty of them were from information brought to me by farmers, field workers etc. Today while working on this paper I was called down the road to the quarry where I found a fine two foot long Russell's Viper that had taken refuge under a pile of stones.

During and just after the monsoon are usually the best seasons for collecting snakes; early morning and evening hours the times of day of most activity. Areas such as rock piles or old ruins, paddy harvest and storage places (rodents are numerous), hedges, roadsides etc. are all good places to look. Walk slowly and lightly and look carefully—snakes are well camouflaged and though deaf are extremely sensitive to the vibration of your foot-falls. During the dry season especially, listen for snakes crawling; any rustling in the undergrowth should be at least briefly investigated. Hunting at night on likely roads (check during the day for snakes killed at night by vehicles which will help determine the potentiality of the road) either by walking with a torch or better still by car or motorbike can be very rewarding especially on very humid or rainy nights. I have found as many as twenty snakes of five different species on roads in the outskirts of Bombay while driving at night, and other collectors have told me of very large numbers collected by this method. If you are interested in catching aquatic varieties such as *Natrix*, *Cerberus* and *Gerardia*, night hunting in flooded paddy fields, especially around and in fish traps and drainage streams will yield good results. The listing of possible spots for snakes is endless, you will discover your own best spots, the main thing is to be persistent, keep looking. Turn over rocks, look in old tree stumps, tear pieces of loose bark from dead trees, search around stacked building materials etc.

Upon finding a snake, the next thing is to catch and bag it. There are some 'standard' methods of snake-catching, but each capture depends a lot on the type of snake and the circumstances. One of the first prerequisites to snake catching is to learn the species, which are poisonous and which aren't. If you suddenly come upon (and it usually is sudden)

a snake and ascertain that it is harmless, let's say a fast one like a Rat Snake or Bronze-back, the only way to get it is to make a fast grab, or even dive on it if the terrain permits. Once you get over the fear of the only superficial scratches a non-poisonous snake can make with its bite (big ones like large water snakes, big dhamans and pythons excepted of course), jumping on a snake becomes a reflex action, your only thought is that you are sure its a harmless one. You have to know your snakes well, for a cobra (or a king cobra) can look like a dhaman (rat snake) to someone who has not seen plenty of both, and it would be a dangerous surprise to land on the former.

Gloves, clamp-sticks, nooses and other apparatus you may try, but you'll probably not use them long; they just make you clumsy, and if the snake doesn't escape you may still end up injuring a specimen. The snake hunting tool many snake men find to be most useful is a 'snake hook' which I will describe shortly. Once you have grabbed a harmless snake you can best control it if you secure a grip behind the neck with one hand, using the other hand to control its flailing body (I make light of non-poisonous snake bites but there is no reason to invite being bitten). Always support the snake's weight as it can easily injure its delicate neck vertebrae by its whip-like activity while trying to escape. You may evolve your own procedures for securing the neck grip; one that I find useful is to swing the snake back between your legs (long pants of course) and, legs pressed together, ease it through until you have the neck encircled by thumb and fingers. Then bag the snake; a double-stitched muslin bag the size of a pillow cover but longer (for knot tying) is probably the most convenient container for harmless and poisonous species until transferred to a cage or terrarium. Fangs easily penetrate cloth, therefore hold a bag containing a venomous snake above the knot and keep it away from inquisitive people and animals.

Ideally, a poisonous snake should be captured without ever touching it with your hands, but this is by no means always possible. As I mentioned, using mechanical devices or nooses on a snake will too often result in the snake being injured, sometimes an internal injury, not immediately apparent, but later the snake may refuse to eat and die of injury and/or starvation. A snake hook, made from a length of bamboo, golf club shaft (or whatever else is convenient), with a heavy wire L attached to the working end, is the most versatile tool in the snake business. If the wire L is made strong enough it can be used for turning over rocks, probing holes etc. as well as its most valuable function, that of lifting and 'pinning' a snake. When it is

feasible to lift or guide a venomous snake into a bag or other container with the snake hook this is obviously to be preferred to picking it up. A useful apparatus to have is a snake bag pinned (so it can be easily removed) to a butterfly net frame which holds the bag wide open from a safe handle-length distance and has often facilitated an easy and safe catch. When this procedure is impossible because the snake is too active or otherwise, the procedure of pinning must be adopted. This is the most common method of snake catching, used by catchers in the forest, professional snake men in zoos and venom production laboratories. A fast snake like a cobra must first be detained, a careful foot or stick pressure on the tail is usually enough to cause a cobra to rear up in its defence. Then the snake hook or other rounded stick is placed horizontally across the junction of the snake's head and neck and pressed gently but firmly, enough to keep the snake from pulling out before you are able to get a safe grip. Extreme care must be taken in dealing with any poisonous snake, both for yourself and for sake of the snake. A Russell's Viper or Cobra will often thrash about once it feels the pressure of the stick on its head and neck; if it looks as though it may injure itself, release the pressure and try again. Secure a firm but not strangling grip just at the base of the snake's head so it cannot reach around and bite. An interesting and instructive note is that some long-fanged species like Russell's Viper may bite so vigorously when being held as to penetrate their own lower jaw, and your thumb if you happen to have it in the wrong place. Occasionally I hear of someone being bitten at the moment of letting the snake go into the bag or box. If some help is available, have him hold the bag open while you place the snake's body deep in, keep your eyes on the position of the snake's head. When you feel the snake pulling away from your hand or it is relaxed let go and jerk your hand clear off the bag. The reason for long bags becomes clear, you are much safer with the snake at the bottom in that few seconds gap in letting the snake go and twisting the top of the bag for tying a secure knot. If alone, or without help, tuck one edge of the bag into belt or wherever convenient, holding the other edge of the bag with the hand not engaged with the snake. Keep snakes in separate bags when possible, small snakes shouldn't be kept with large ones, poisonous ones separate from non-poisonous ones, and Russell's Vipers and kraits away from other species or you may have dead and/or devoured snakes.

It seems hardly adequate for me to try to explain snake catching methods in writing, but it will serve as introductory. The rest comes

with observation of a skilled snake handler (*not* most 'jadhu walas'), and finally personal experience.

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#### 11. NEW LOCALITY RECORDS OF *HORAICHTHYS* *SETNAI* KULKARNI, FROM NARMADA AND TAPTI RIVERS

*Horaichthys setnai* Kulkarni (Family Horaichthyidae) is a small, translucent cyprinodont fish, with elongate, narrow and somewhat compressed body. Being a small fish, it is 'absolutely insignificant and worthless as food', but is 'a suitable species for use in malarious areas of coastal waters' (Job 1940). The distribution of this species, as recorded by Kulkarni (1940), is 'the backwaters and tanks within tidal limits along the western coast of Peninsular India, about 160 km. (=100 miles) north and south of the city of Bombay'. Job (op. cit.) has recorded this species 'from shallow inlets within tidal influence of backwaters in Cochin and Travancore' and in his opinion, 'this fish extends throughout the western coast of Peninsular India'. As this fish is 'a valuable adjunct to other major larvivores like *Aplocheilus lineatus* and *A. panchax*' (Job, op. cit.), it is of prime importance to have exact knowledge of the distribution of this larvicidal fish. Based on the collections of this species from Narmada and Tapti rivers during the 1962 monsoon season, two new locality records are reported in the present communication.

Several specimens of *H. setnai* were collected from spawn-collection nets, while the spawn prospecting investigations were in progress in the lower reaches of Narmada and Tapti Rivers in Gujarat State during the 1962 monsoon season. 18 specimens of this species, measuring 17-25 mm. in total length, were collected from Narmada River at Jhanor, about 64 km. from the sea and about 24 km. below the tidal limit (at Bhalod) on 22nd, 25th and 28th July 1962 and 21st August 1962. 197 specimens in the size range 18-30 mm. were collected from Tapti River at Kathor, about 40 km. from the sea and about 5 km. above the tidal limit (at Abhrama) from 9th to 22nd July 1962, and one solitary specimen measuring 22 mm. in total length at Bodhan, about 50 km.